

In re Patent Application of
GARNIER ET AL.
Serial No. 09/499,060
Filed: February 4, 2000

I. The Independent Claims Are Patentable

The Examiner rejected independent Claims 9, 15, 21, 29 and 36 over the Tanigawa patent in view of the Applicants' prior art FIG. 1. The Examiner cited the Applicants' prior art FIG. 1 as disclosing a ramp generator having a current source Ig1 with no expressed teaching of the structure thereof. The Examiner cited Tanigawa as disclosing in FIG. 4 a current sink comprising "a current mirror" which has the advantage of gain control.

The Examiner has taken the position that it would have been obvious to modify the current sink as disclosed in Tanigawa to a current source, and replace the current source Ig1 in the Applicants' prior art FIG. 1 with the modified current source. Moreover, the Examiner has further taken the position that since this modification yields a circuit identical in structure to the claimed invention, "it must inherently have the same function."

The claimed invention, as recited in independent Claim 9, for example, is directed to a voltage ramp generator circuit comprising a capacitance, and a charging circuit connected to the capacitance. The charging circuit comprises a current generator having a first resistance, and a circuit connected to the current generator and to the capacitance having a second resistance and enabling a capacitance charging current to be proportional to a square of a ratio of the second resistance and the first resistance.

The presence of the second resistance advantageously permits compensation for a spread of the first resistance. This spread may be due to operating temperature changes, for example. Without the second resistance, the spread of the first resistance is reflected in variations of the capacitance

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charging current. Therefore, in order to compensate for the spread of the first resistance, the second resistance is included. Consequently, the capacitance charging current can be controlled based upon the ratio of the second and first resistances. In particular, the capacitance charging current is proportional to a square of a ratio of the second resistance and the first resistance.

Referring now more particularly to the Tanigawa patent, a gain control circuit of the current mirror type is disclosed in FIG. 4. The relationship between the signal current I_1 , and the output current I_2 is based upon the equation $I_2 = I_1 * A$. The Examiner has characterized the output current I_2 as the capacitance charging current in the present invention. The variable A is based upon the equation $\exp(V_{BE}/V_T)$, with V_T being a thermal voltage.

Referring to column 1, lines 59-61 in Tanigawa, which provides:

"Therefore, the output current I_2 is set equal to a value A times larger than the input current I_1 ..." (Emphasis added.)

Tanigawa further discloses that by changing the value of the variable resistance R, as illustrated in FIG. 4, the voltage thereacross is varied so that the gain of the gain control circuit can be set to a desired value.

Even if the references were combined as suggested by the Examiner, the claimed invention is not produced. The Applicants' prior art FIG. 1 and the Tanigawa patent both fail to teach or suggest that the capacitance charging current is proportional to a square of a ratio of the second resistance (from Tanigawa) and the first resistance (internal resistance

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of current source Ig1), as recited in independent Claim 9, for example.

Moreover, there is no motivation or suggestion to take the current sink as disclosed in Tanigawa and modify it to a current source so that it may be combined with the voltage ramp generator circuit disclosed in the Applicants' prior art FIG. 1. It thus appears that the Examiner is using impermissible hindsight reconstruction to modify Tanigawa in view of the Applicants' prior art FIG. 1 in an attempt to produce the claimed invention. The prior art references, individually or in combination, do not teach or suggest that the capacitance charging current is proportional to a square of a ratio of the second resistance and the first resistance.

Accordingly, it is submitted that independent Claim 9 is patentable over Tanigawa in view of the Applicants' prior art FIG. 1. Independent Claims 15, 21, 29 and 36 are similar to independent Claim 9, by also reciting that the capacitance charging current is proportional to a square of a ratio of the second resistance and the first resistance.

In view of the patentability of the independent claims as discussed above, it is submitted that their dependent claims, which recite yet further distinguishing features, are also patentable over the prior art. Thus, these dependent claims require no further discussion herein.

CONCLUSION

In view of the arguments provided herein, it is submitted that all the claims are patentable. Accordingly, a Notice of Allowance is requested in due course. Should any minor informalities need to be addressed, the Examiner is

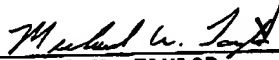
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